



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/265,493	03/09/1999	DAVID C. TANNENBAUM	MSFT-1167	4578

41505 7590 01/16/2007
WOODCOCK WASHBURN LLP (MICROSOFT CORPORATION)
CIRA CENTRE, 12TH FLOOR
2929 ARCH STREET
PHILADELPHIA, PA 19104-2891

EXAMINER

BRIER, JEFFERY A

ART UNIT	PAPER NUMBER
----------	--------------

2628

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/265,493

Applicant(s)

TANNENBAUM, DAVID C.

Examiner

Jeffery A. Brier

Art Unit

2628

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment filed on 12/07/2004 has been entered.

Response to Arguments

2. Applicant's arguments filed 11/03/2004 and 12/07/2004 have been fully considered but they are not persuasive. The 12/07/2006 arguments will be addressed below since they are directed to the 9/7/2004 office action. In the 12/07/2004 arguments at page 7 applicant alleges the references fail to teach the last step of claim 1. Applicant argues at page 8 first paragraph that since Lathrop uses all the illumination values in combination with the texture values by using a combining function, it does not teach "determining the pixel value by using...unselected parameters...and...textures values...associated with the selected parameters". This argument is not totally persuasive due to the claim form. When all parameters are selected, note the claimed "selecting at least one parameter" in claims 1 and 15 and the "wherein the parameters that are not selected from the plurality of parameters" limitation in claim 10; then no unselected parameters are present. It should be noted that in both claims 1 and 15 "the unselected parameters" lack antecedent basis in the claim, thus, this claim limitation is being analyzed for prior art purposes as being "unselected parameters". Similarly it should be noted that in both claims 1 and 15 "the set of unselected parameters" lack antecedent basis in the claim, thus, this claim limitation is being analyzed for prior art purposes as being "a set of unselected parameters". When no "unselected parameters"

Art Unit: 2628

are present, then claims 1, 10, and 15 do not require this argued limitation. When claims 1, 10, and 15 are analyzed to have "unselected parameters" then Lathrop suggests this because illumination values described at column 4 lines 50-64 are values for pixels and not values for texture values. Lathrop's texture values are generated by texture lookup table module 30, see column 5 lines 3-12. Thus, Lathrop's combining section 34 renders the pixels from non-texture values (illumination values) and from texture values. Applicant argues at page 8 second paragraph that Lauzon falls short of teaching "determining the pixel value by using...unselected parameters...and...textures values...associated with the selected parameters". Applicant characterizes Lauzon as selecting both of the "components for modification: the changing components as a selected texture is modified and the constant components for pre-computing". Similarly it can be said applicant selects both of the selected parameters and the unselected parameter by selecting the selected parameters. Thus, the argument presented by applicant is not persuasive. Lauzon selects components that are associated with a texture with the remaining unselected components being pre-computed and stored in a shading buffer. Then during rendering the selected texture components are computed and combined with the corresponding unselected components stored in the shading buffer. Thus, Lathrop and Lauzon teach or suggest the claimed invention.

Applicant needs to further amend claims 1, 10, and 15 to better define how the set of unselected parameters is formed.

Applicant needs to better claim a useful and concrete result in the independent claims. Dependent claim 2 may be sufficient to add a useful and tangible result to each of the independent claims.

Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the limitation found in claims 6, 12, and 16 "a surface normal vector" is not found in the specification, refer to applicants specification at page 12 last line to page 13 line 4.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The previous rejection mailed on 9/7/2004 is reproduced below with modifications directed to claim amendments and clarifying claim and reference interpretation.

Art Unit: 2628

6. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lathrop et al (5,097,427) in view of Lauzon (5,977,982), and further in view of Peercy et al (5,710,876).

Regarding claim 1, Lathrop et al discloses that the claimed feature of a method for applying texture mapping in per-pixel operations (See Abstract, Fig 1, col 2 line 60-col 4 line 25), the method comprising:

receiving a plurality of parameters that are used to define a pixel value at a pixel in a primitive (See Abstract, Fig 1, col 2 line 60-col 4 line 25);

selecting at least one parameter (i.e. illumination values) from the plurality of parameters (See Abstract, Fig 1, col 2 line 60-col 4 line 25, col 4 line 50-col 5 line 56),

[substituting a texture value from a texture map in place of a values produced from an algorithm that uses the selected at least one parameter to determine a pixel value;] (*this is taught by Peercy*).

determining a texture value for each of the selected parameters by accessing a set of textures, the texture value for the selected parameters varying over the primitive (See Abstract, Fig 1, col 2 line 60-col 4 line 25, col 4 line 50-col 5 line 56);

determining (Combining Function in Fig 1) the pixel value by using the unselected parameters and the texture values over the primitive, wherein the set of unselected parameters are not texture values and the texture values are

associated with the selected parameters. (See Abstract, Fig 1, col 2 line 60-col 4 line 25, col 4 line 50-col 5 line 56)

Lathrop et al does not specifically disclose that “determining the pixel value by using the unselected parameters and the texture values over the primitive”.

However, some claim interpretations of claim 1 do not require unselected parameters. The claim interpretation of claim 1 which do require unselected parameters are taught and suggested by both the Lathrop reference and the Lauzon reference.

Lauzon discloses such claimed feature of invention. [“Specifically...rendering engine 10 can be arranged in terms of components [“unselected parameters” in recited claims] which are constant, i.e.-do not change as a selected texture 50 is modified, and components [“selected parameters” in recited claims] which can change as a selected texture 50 is modified...” (See col 5 line 3-13, Also See Abstract line 6-16, col 2 line 17-col 4 line 6)

It would have been obvious to one skilled in the art to incorporate the teaching of Lauzon into the teaching of Lathrop et al, in order to provide “reduced computational requirements and real time rendering in many circumstances” (See Abstract line 16-20 in Lauzon), as such improvement is also advantageously desirable in the teaching of Lathrop et al for providing a fast image processing by eliminating the unnecessary computation for unchanged scene or images or to reducing the rendering time by eliminating the calculation for the contributions of lights in the scene during rendering.

Also, Lathrop et al does not explicitly disclose that "substituting a texture map value for a value produced from an algorithm that uses the parameter", as recited claim 1. However, such limitation is shown in the teaching of Peercy et al. [i.e. "the texture map may comprise a surface matrix at each texel, and can be used as a substitute for the surface matrix or alternately it can be used for texturing the set of colorimetric sensor values calculated from the surface matrix", "selected texels are used either to substitute for or to scale one or more of the surface's material properties, such as its diffuse color components"] (See Abstract line 19-24, col 17 line 42-50).

It would have been obvious to one skilled in the art to incorporate the teaching of Peercy et al into the teaching of Lathrop et al, in order to "provide a practical color rendering system for computer graphics that has sufficient speed for interactive graphics, and more accurately represents the objects in an image on a computer screen" (See col 3 line 16-20 in Peercy et al), as such improvement is also advantageously desirable in the teaching of Lathrop et al for generating properly represented pixel values in the processing of texture mapping.

Regarding claim 2, Lathrop et al discloses that displaying the generated pixel light value on a display device. (See Abstract, Fig 1, col 2 line 60-col 4 line 25)

Regarding claim 3, Lathrop et al discloses that the plurality of parameters includes per-primitive parameters, which are defined over the entire primitive. (See Abstract, Fig 1, col 2 line 60-col 4 line 25)

Regarding claim 4, Lathrop et al discloses that the primitive is a polygon. (See Abstract, Fig 1, col 2 line 20-35, col 2 line 60-col 4 line 25)

Regarding claim 5, Lathrop et al discloses that the plurality of parameters includes both scalar and vector parameters. (See Abstract, Fig 1, col 1 line 51-62, col 2 line 60-col 4 line 25)

Regarding claim 6, Lathrop et al discloses that the plurality of parameters includes one or more of emission material color, ambient material color, global ambient light color, attenuation factor, ambient light color, diffuse material color, diffuse light color, specular material color, specular light color, a surface normal vector, a specular exponent, an environment map color, and a shadow color. (See Abstract, Fig 1, col 2 line 60-col 4 line 25)

Regarding claim 7, Lathrop et al discloses that the operation of determining the texture value further comprises the operation of:

Receiving texture coordinates for accessing the set of textures (See Abstract, Fig 1, col 2 line 60-col 4 line 25)

Accessing the textures in response to the texture coordinates to generate the texture values. (See Abstract, Fig 1, col 2 line 60-col 4 line 25)

Regarding claim 8, Lathrop et al discloses that the accessed texture includes a plurality of texture elements, the method further comprising the operation of:

Filtering the accessed texture elements of the texture map onto the selected pixel to generate the texture value associated with the pixel (See Abstract, Fig 1, col 2 line 60-col 4 line 25, col 7 line 39-48)

Regarding claim 9, Lathrop et al discloses that a light value is generated for the pixel value by evaluating a lighting equation that is defined in terms of the plurality of parameters. (See Abstract, Fig 1, col 2 line 60-col 4 line 25)

Regarding claim 10, refer to the discussion for the claim 1 hereinabove, Lathrop et al discloses that the claimed feature of a device for generating per-pixel values of pixels in a primitive by using texture parameters, the pixel values of the pixels in the primitive being defined by a plurality of parameters, (See Abstract, Fig 1, col 2 line 60-col 4 line 25) the device comprising:

a texture memory ["memory"] for storing a set of texture maps (See Abstract line 1);

a texture unit [4] for receiving texture coordinates for accessing a set of selected texture maps in the texture memory, the set of selected texture maps being associated with a set of selected parameters selected from among the plurality of parameters that define a pixel value in the primitive, the texture unit generating a texture value associated with the pixel from each of the selected texture maps, wherein the

Art Unit: 2628

parameters that are not selected from the plurality of parameters define a set of unselected parameters; and

a rendering unit for generating the pixel value in response to the texture values of the selected parameters and to the unselected parameters. (See Abstract, Fig 1, col 2 line 60-col 4 line 25, col 4 line 50-col 5 line 56)

Regarding claims 11-14, Claims 11-14 are respectively equivalent to claims 4,6,5 and 9, and thus the rejections to claims 4,6,5 and 9 hereinabove are also respectively applicable to claims 11-14, but applied in view of the rejections to base claim 10.

Regarding claim 15, Claim 15 is the corresponding computer graphics system of claim 1. Thus, the rejection to claim 1 hereinabove is also applicable to claim 15.

Regarding claims 16-20, Claims 16-20 are respectively equivalent to claims 6,5,9,4 and 8, and thus the rejections to claims 6,5,9,4 and 8 hereinabove are also respectively applicable to claims 16-20, but applied in view of the rejections to base claim 15.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

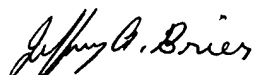
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

Art Unit: 2628

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffery A Brier whose telephone number is (571) 272-7656. The examiner can normally be reached on M-F from 7:00 to 3:30. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi, can be reached at (571) 272-7664. The fax phone Number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jeffery A Brier
Primary Examiner
Division 2628